

Amendments to the Claims

Please cancel claim 4 without prejudice.

The following listing of claims will replace all prior versions and/or listings of claims in the application:

Listing of Claims

1. (Currently amended): A centrifugal compressor unit comprising:

a motor means rotationally driving a rotor; and

at least one compressor comprising:

a stator body; and

a set of impeller wheels which are mounted on a driven shaft rotationally driven by the rotor in the stator body;

wherein the motor and each compressor is mounted in a common housing sealed against the gas handled by the compressor unit;

a set of active bearings for axially and radially guiding the rotor and the driven shaft; and

cooling means for cooling the motor means and the guide bearings by tapping off some of the gas handled by the compressor at an outlet from a first compression stage, passing the

gas through the motor means and through the bearings and reinjecting the gas into an inlet side of a compressor, wherein the cooling means are equipped with filtering means for filtering the gas handled by the compressor, wherein the cooling means comprises a set of internal passages for feeding the motor means and the bearings with cooling gas which are formed in the compressor unit, and wherein the flow of cooling gas in the motor means is separate from the flow of cooling gas in the bearings, and wherein the flow of cooling gas converges upstream of the first compression stage.

2. (Previously presented): The centrifugal compressor unit of claim 1, wherein the cooling means further comprises a set of external lines collecting the gas on the outlet side of the first compression stage and feeding the internal passages in parallel.
3. (Previously presented): The centrifugal compressor unit of claim 2, wherein the internal passages for feeding the motor means are fed in parallel with the internal passages for feeding the bearings with cooling gas.
4. (Cancelled)
5. (Previously presented): The centrifugal compressor unit of claim 1, wherein, with the driven shaft of the compressor supported by two end radial bearings, the cooling means comprise an axial passage running from one bearing to the other and fed at one of its ends by the external lines, and wherein the axial passage globally running longitudinally and radially externally through the compressor.
6. (Previously presented): The centrifugal compressor unit of claim 1, wherein the internal passages for feeding the bearings comprise a set of directional passages directed radially externally in the compressor, and wherein each internal passage feeds one bearing.

7. (Previously presented): The centrifugal compressor unit of claim 1, wherein the motor is fed with cooling gas via an orifice formed in an end cover and in communication with an external line.

8. (Previously presented): The centrifugal compressor unit of claim 1, wherein the internal passages for feeding the bearings comprise a set of directional passages directed radially externally in the compressor, and wherein each internal passage feeds one bearing, and wherein the motor is fed with cooling gas via an orifice formed in an end cover and in communication with an external line, and wherein the flow of cooling gas is mixed with the flow of cooling gas leaving the bearings cooled by the gas coming from the internal passages.

9. (Previously presented): The centrifugal compressor unit of claim 1, further comprising means for regulating a refrigeration flow rate for the motor and for each bearing.

10. (Previously presented): The centrifugal compressor unit of claim 1, further comprising means for collecting flows of cooling gas from members situated on a same side as an equalizing piston.

11. (Currently amended): The centrifugal compressor unit of claim 2, wherein the ~~cooling means~~external lines are equipped with filtering means for filtering the gas handled by the compressor.

12. (Previously presented): The centrifugal compressor unit of claim 11, wherein, with the driven shaft of the compressor supported by two end radial bearings, the cooling means comprise an axial passage running from one bearing to the other and fed at one of its ends by the external

lines, and wherein the axial passage globally running longitudinally and radially externally through the compressor.

13. (Previously presented): The centrifugal compressor unit of claim 12, wherein the internal passages for feeding the bearings comprise a set of directional passages directed radially externally in the compressor, and wherein each internal passage feeds one bearing.

14. (Previously presented): The centrifugal compressor unit of claim 13, wherein the motor is fed with cooling gas via an orifice formed in an end cover and in communication with an external line.

15. (Previously presented): The centrifugal compressor unit of claim 14, wherein the flow of cooling gas is mixed with the flow of cooling gas leaving the bearings cooled by the gas coming from the internal passages.

16. (Previously presented): The centrifugal compressor unit of claim 11, further comprising means for regulating a refrigeration flow rate for the motor and for each bearing.

17. (Previously presented): The centrifugal compressor unit of claim 11, further comprising means for collecting flows of cooling gas from members situated on a same side as an equalizing piston.